DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION DIVISION

Technical Guidance Document #5

Hand-Augered Monitoring Wells

1. Hand-augered monitoring wells will only be approved on a site-specific basis after review of site conditions by the DEQ Petroleum Technical Section.

   The site in question must have documented fine-grained soil conditions such as clay, silt, or fine-grained sand. Hand-augered wells will not be approved at sites where soil conditions are unknown. Acceptable documentation for soil conditions will include boring/soil information from the site in question and/or nearby UST sites or other sites where site assessment or remedial investigations have been completed and soil and groundwater conditions are known. Geologic environments with known gravel lenses or artificial fill debris are not acceptable for the installation of hand-augered monitoring wells.

2. The total depth of hand-augered monitoring wells shall not exceed 15 feet measured from the ground surface to the bottom of the screened interval.

   Based on our review of the cost-effectiveness of this method versus other methods, we found that beyond a depth of 15 feet, other methods are equally cost effective and have a higher level of quality control not subject to problems such as cross contamination of samples caused by sloughing of contaminated soil, mixing of sediments from various intervals, liquefaction of fine-grained sediments at the water table interface, and difficulty in keeping the borehole open to allow installation of a filter pack and bentonite grout seal of adequate diameter to meet DNRC regulations.

   Please be aware that a licensed monitoring well installer will be necessary for any monitoring well installed where groundwater is deeper than 10 feet below ground surface.

3. Monitoring wells shall be constructed and installed in a manner that will allow continuous monitoring of the water table regardless of seasonal groundwater fluctuation. The screened interval must be advanced a minimum of 5 feet below the water table.

   It is an industry-wide standard to complete the well screen a minimum of 5 feet into the water table. In situations where this is not possible or such conditions are anticipated, hand-augered monitoring wells will not be approved by DEQ.

4. Monitoring well screens and risers shall not be less than 2 inches interior diameter.

Smaller casings are not of sufficient diameter to allow most common groundwater monitoring equipment (bailers, water level probes, purge pumps, etc,..) to pass through.

5. Rigid centralizers must be used to stabilize the casing within the borehole prior to the installation of the filter pack and well seal materials. Use of duct tape or PVC glues to bond centralizers to risers or screens is unacceptable.

   Use of centralizers will allow for a continuous filter pack and bentonite grout seal and insure that sampling equipment will not be obstructed by bending of the riser or screen.

6. Hand-augered monitoring wells will not be allowed at sites where floating free product is known to be present.

   When free product is known to be present we typically require installation of monitoring wells with a minimum 4-inch inside diameter. Often these wells may be immediately used for free product recovery without remobilizing a drilling rig to drill additional large diameter recovery wells and in some cases may alleviate the need for installation of additional recovery systems. Although initial material costs may be higher, installation of 4-inch wells usually decreases the overall cost to the owner and the state fund by allowing for immediate recovery of free product prior to approval of a corrective action work plan. This allows for an expedited response in situations where immediate free product removal is possible thus decreasing potential long-term impacts and the size of the contaminant plume. In addition, four 4-inch wells can be used to install soil vapor extraction (SVE) systems to mitigate vapor accumulation and enhance free product recovery. If free product is discovered during installation of hand-augered monitoring wells, DEQ must be immediately notified to determine whether the proposed action is appropriate. In such cases we will require that additional wells installed be a minimum of 4 inches in diameter.

7. Installation of hand-augered wells will not be allowed in the winter when depth of the frost line makes such installation difficult or impossible.

   In such cases use of other drilling equipment is warranted and will be required.

8. A DEQ representative must be on-site during installation of the well.

   A minimum of two weeks advance notice must be provided to DEQ to allow time for scheduling of personnel to be on-site.

9. Monitoring wells shall be constructed and installed in accordance with the Montana Board of Water Well Contractors requirements (ARM 36.21.801-810) and according to Technical Guidance Document #13 - Monitoring Well Construction Requirements.

Wells not installed according to the standards detailed by the DNRC and Technical Guidance Document #13 will not be accepted for data collection. In addition, the DEQ will not recommend reimbursement to the PTRCB for costs related to completion of improperly constructed monitoring wells.

10. This policy is performance based. Continued regulatory allowance of this method of well installation will depend on the success of the method in the field.

    If it is determined from actual installation and monitoring data this installation technique has a higher failure rate than other commonly used ground water monitoring well installation techniques, this policy will be revaluated or terminated. Documentation of other recurring problems with this method will also result in discontinuance of DEQ approval of the method.